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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. 97-124

NPDES NO. CA0078352

WASTE DISCHARGE REQUIREMENTS
FOR
TEXACO EXPLORATION AND PRODUCTION INC.
KERN RIVER OIL FIELD
KERN COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Board) finds that:

1. Texaco Exploration and Production Inc., (hereafter Discharger) a Delaware corporation, submitted a Report of Waste Discharge (RWD) on 30 October 1996 for permit renewal to discharge waste under the National Pollutant Discharge Elimination System (NPDES).
2. The discharge is presently regulated by Waste Discharge Requirements (WDRs) Order No. 92-106 (NPDES No. CA0078352), adopted by the Board on 29 May 1992. Order No. 92-106 expired on 1 May 1997. As the Discharger submitted a complete application to renew the NPDES permit prior to expiration, the Order was administratively continued in force.
3. The Discharger produces up to 43 million gallons per day (mgd) of oil field wastewater from crude oil production activities in the Kern River Oil field, immediately north of Bakersfield as shown in Attachment A, which is attached hereto and part of this Order by reference.

TREATMENT AND DISCHARGE ALTERNATIVES

4. Prior to discharge, wastewater is treated to remove oil, grease, and inorganic sediments. Treatment consists of mechanical separation, sedimentation, and air flotation. The treatment plants are within Sections 9 and 5, T29S, R28E, MDB&M, and they reportedly have a maximum oil and grease treatment capacity of 43 mgd.
5. Up to 16 mgd of the generated wastewater is converted to steam by cogeneration plants and steam generators and injected for enhanced oil recovery purposes. Steam injection wells are Class II injection wells permitted by the Division of Oil and Gas (DOG). The cogeneration wastewater feed is softened for corrosion control before it is converted to steam. The softening process produces brine water which is disposed of by Class II injection wells. The cogeneration plants utilize reverse osmosis (RO) to treat water from five source water wells for nitrogen oxide emission control in the cogeneration plants. The RO reject water is also disposed of by injection wells permitted by the DOG. The source

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water is also treated and used in the offices and plants as drinking water. The Department of Health Services, Office of Drinking Water (DHS) permitted the potable water treatment system and the Kern County Environmental Health Services permitted the source water wells.

6. The remaining wastewater, up to 27 mgd, is discharged to:
 - a. The Beardsley Canal;
 - b. The Carrier Canal;
 - c. Cawelo Water District's Reservoir B, regulated by WDRs Order No. 95-031 (NPDES No. CA0082295);
 - d. Injection wells; or
 - e. Any combination of a, b, c, and d, above.

DISCHARGE QUALITY AND LOCATIONS

7. The Discharger collects effluent samples daily for conductivity (specific electrical conductance at 25°C, also referred to as "EC"), boron, and chloride and weekly for oil and grease. The monitoring results are submitted monthly, the results show that the discharge has complied with the effluent limitations of Order No. 92-106. During January 1991 to March 1997, the discharge exhibited the following characteristics:

<u>Constituent</u>	<u>Units</u>	<u>Average Concentration</u>	<u>Concentration Range</u>
EC	μmhos/cm	947	625 to 1,190
Chloride	mg/l	138	92 to 169
Boron	mg/l	1.1	0.9 to 1.2
Oil and Grease	mg/l	24	18 to 30
Flow	mgd	12	9.9 to 15.1

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8. Discharge to the Beardsley Canal occurs in the NE 1/4 of the SW 1/4 of Section 9, T29S, R28E, MDB&M (Discharge 001). Discharge to the Carrier Canal occurs in the NW 1/4 of the SE 1/4 of Section 17, T29S, R28E, MDB&M (Discharge 002). Each discharge location is shown in Attachment B, attached hereto and incorporated by reference as part of this Order. The facility and Discharges 001 and 002 are within the Kern Delta Hydrologic Area (No. 557.10), as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.
9. Surface water drainage is toward the Beardsley Canal. The Discharger reports that contaminated storm water, if any, will not enter the canal and that storm water can be contained on site. However, the Discharger has not demonstrated whether adequate spill prevention containments are constructed to assure that contaminated rainfall runoff does not discharge to the canal.
10. Chevron USA, Inc. (hereafter Chevron) and ARCO Western Energy (hereafter ARCO) own and operate similar facilities adjacent to the Discharger and likewise discharge to the Beardsley and Carrier Canals. Discharge from Chevron to the Beardsley Canal occurs about 350 yards upstream of Discharge 001. ARCO discharges to the Beardsley Canal about one mile downstream of Discharge 001. Discharge 002 is downstream of discharge from Chevron and upstream of discharge from ARCO, as shown in Attachment B. Discharges from Chevron and ARCO are regulated by separate NPDES permits.

SURFACE WATERS

11. The Beardsley Canal is lined and originates on the Kern River at the Beardsley Weir about one mile upstream of Discharge 001. It becomes the Lerdo Canal at Seventh Standard Road near Oildale, approximately 5 miles downstream of Discharge 001. The Lerdo Canal is unlined and traverses a portion of the Poso Groundwater Hydrographic Unit.
12. Wastewater is discharged intermittently to the Beardsley Canal. Maintenance may be performed on the Beardsley and Lerdo canals for a period of up to four weeks in December or January annually. During this period, the North Kern Water Storage District (canal owner) may require no discharges to the Beardsley Canal. In these instances, the Discharger may discharge to the Carrier Canal, with permission and agreement of Carrier Canal owners. The last discharge to the Carrier Canal was in January 1995 for about 10 days. During 1992 through 1995, similar short term discharges to the Carrier Canal occurred in December or January of each year. During the lowest flow periods in the Beardsley Canal (roughly November through February), the Discharger may discharge to injection wells and to Cawelo Water District's Reservoir B.

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13. The Cross Valley Canal conveys California Aqueduct water to the Beardsley Canal, via Conduit "A", to supplement Kern River water during the irrigation season (see Attachment B). Water from Conduit "A" enters the Beardsley Canal downstream of the discharges by the three oil companies, providing additional dilution.
14. The Carrier Canal originates on the Kern River, below Southern California Edison Kern River Powerhouse No.1, at Rocky Point Weir immediately upstream of Discharge 002. The canal serves as a significant source of agricultural water supply for the Kern Delta Water District (KDWD). Total agricultural land served by the Carrier Canal is approximately 72,000 acres. It is unlined, parallel to the Kern River Channel, and is frequently diverted into the Kern River at several locations. If discharge is to the Carrier Canal, the City of Bakersfield coordinates with the Discharger to ensure no wastewater enters the Kern River.
15. The Carrier Canal may also supply water to the Kern County Water Agency's (KCWA) Water Purification Plant for municipal use. The City of Bakersfield coordinates with the Discharger and the KCWA to ensure no wastewater enters the purification plant. If wastewater is discharged to the Carrier Canal, the KCWA receives prior notification to ensure that other sources of raw water supply for the purification plant are used for the duration of the discharge. The Carrier Canal flows to a point known as "Four Weirs," where it is diverted to several unlined canals for irrigation. Prolonged transport of wastewater from the Discharger in the unlined Carrier Canal and related conveyance canals could result in groundwater degradation in the canal service areas.
16. The Beardsley and Lerdo canals serve as a significant source of agricultural water supply to the North Kern Water Storage District and Cawelo Water District. Total agricultural land served by the Beardsley and Lerdo canals within these two Districts is an estimated 110,000 acres, of which about 40,000 acres are permanent crops that are boron-sensitive. The Beardsley Canal also serves approximately 10,000 acres of land south of these Districts and within the sphere of influence of the City of Bakersfield.
17. Maintenance of acceptable boron levels in the irrigation supply is essential to the continued success of growing boron-sensitive crops in the service area.
18. The Beardsley, Carrier, Lerdo, and their tributary irrigation canals; Poso Creek, Kern River, and surface waters tributary thereto, are waters of the United States.

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SURFACE WATER QUALITY

19. The Beardsley Canal's service area has historically received water of excellent quality. The Discharger collects daily receiving water samples from the canal and submits the monitoring reports monthly. During January 1991 to March 1997, upstream flows in the Beardsley Canal above discharges from Chevron, ARCO, and discharge point 001 exhibited the following characteristics:

<u>Constituent</u>	<u>Units</u>	<u>Average Concentration</u>
EC	μ mhos/cm	165
Chlorides	mg/l	9
Boron	mg/l	0.11

20. The Discharger collects daily samples from the Beardsley Canal and submits the results monthly. The monitoring reports show the discharge has complied with the receiving water limitations of Order No. 92-106. During January 1991 to March 1997, downstream flows in the Beardsley Canal below Discharge 001 and the discharges from Chevron and ARCO contained the following characteristics:

<u>Constituent</u>	<u>Units</u>	<u>Average Concentration</u>
EC	μ mhos/cm	257
Chlorides	mg/l	24
Boron	mg/l	0.27

21. Flows in Conduit "A", before it connects to the Beardsley Canal, exhibit the following characteristics:

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<u>Constituent</u>	<u>Units</u>	<u>Average Concentration</u>
EC	μ mhos/cm	546
Chloride	mg/l	96
Boron	mg/l	0.22

BASIN PLAN

22. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition*, (hereafter "Basin Plan") designates beneficial uses and contains water quality objectives for all waters of the Basin. These requirements implement the Basin Plan.
23. The Basin Plan contains the following maximum salinity limits for industrial discharges to surface waters or stream channels:
- | <u>Constituent</u> | <u>Units</u> | <u>Concentration</u> |
|--------------------|---------------|----------------------|
| EC | μ mhos/cm | 1,000 |
| Chlorides | mg/l | 175 |
| Boron | mg/l | 1.0 |
24. Resolution No. 82-136, a Basin Plan amendment for discharge of oil field wastewater, allows salinity concentrations in excess of the Basin Plan effluent limits for discharges to surface waters. To qualify, the discharge cannot substantially affect water quality or cause a violation of water quality objectives.
25. Based on public hearings in October 1982 and March 1985, the Board determined that a change in receiving water quality to the following maximum concentrations is consistent with Resolution No. 82-136, antidegradation policy, and long-term agricultural use: EC of 700 μ mhos/cm; chloride of 175 mg/l; and boron of 0.5 mg/l, provided that groundwater degradation be controlled as specified in the Basin Plan.

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26. The Lerdo Canal, its distributaries, and reclamation areas served by the canal northwest of the Kern River Oil Field are within the Kern River and Poso Groundwater Hydrographic Units. The Basin Plan requires that salinity from all sources shall not increase groundwater EC in Kern River unit by more than 5 μ mhos/cm per year, and in the Poso unit by more than 6 μ mhos/cm per year.

BENEFICIAL USES OF SURFACE WATERS

27. The beneficial uses of the Carrier Canal are municipal, agricultural, and groundwater recharge.
28. The beneficial uses of the Beardsley and Lerdo canals are agricultural water supply and groundwater recharge.
29. The beneficial uses of Poso Creek are agricultural water supply, water contact and noncontact water recreation, warm and cold freshwater habitat, wildlife habitat, groundwater recharge, and freshwater replenishment.
30. The beneficial uses of the Kern River, below Southern California Edison Kern River Powerhouse No.1, are municipal, agricultural, industrial, water contact and noncontact water recreation, warm freshwater habitat, wildlife habitat, rare and endangered species, and groundwater recharge.
31. The Beardsley and Carrier canals each have numerous cross connections with other canals downstream of the discharge points. The beneficial uses of these canals are similar to those of the Beardsley and Carrier.

GROUNDWATER

32. Depth to the first encountered groundwater (unconfined) in the area ranges from about 100 feet below ground surface (bgs) in Bakersfield to about 600 feet bgs in the northeastern service area of Cawelo Water District. The general groundwater gradient north of the Kern River is toward the northwest.
33. The quality of unconfined groundwater in areas recharged by the Carrier and other distributary irrigation canals varies in EC from about 200 μ mhos/cm in the immediate Kern River fan to over 3,000 μ mhos/cm near the Kern Lake Bed. The majority of the groundwater contains total dissolved solids (TDS) concentrations of 120 to 980 mg/l, with an average of about 238 mg/l within the urban Bakersfield area.

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34. The beneficial uses of groundwater in the vicinity and downstream of the discharge points are municipal, industrial, and agricultural water supply.

MANAGEMENT PLAN

35. The Discharger, ARCO, and Chevron have developed and follow a mutually agreed Management Plan (MP) that governs discharges to the Beardsley and Carrier canals. The MP, executed by all parties on 3 December 1992, requires that upstream receiving water and effluent samples be collected and analyzed by a State certified laboratory contractor (hereafter contractor). The contractor determines the maximum volume of wastewater each discharger may discharge to ensure the receiving water quality downstream of the discharges remains less than 95% of the permitted limits. The Board reviewed and approved the MP in November 1992 and the Discharger began implementing it in December 1992.
36. The MP includes two mass balance equations for Discharges 001 and 002. The equation for discharges to the Beardsley Canal is a function of receiving water and discharge flows, and concentrations of constituents in the effluent and in the receiving water upstream of the discharge. Flows in the canals can be measured via existing weirs and flow meters owned by the canal owners.
37. Order No. 92-106 specified effluent flow limits for discharge into Beardsley Canal. Currently, wastewater flows are limited by the assimilative capacity of the receiving water and the treatment system capacity in accordance with the MP. The contractor evaluates each discharge to the canal and determines whether or not flows must be adjusted to ensure compliance with the receiving water limits.
38. The contractor collects effluent samples daily, and water samples daily from the Beardsley Canal upstream and downstream of the discharges from the three oil companies. Boron is reportedly the determining factor in complying with the receiving water limitations. Daily analyses are used in the mass balance equation to calculate the maximum allowable flow by each oil company. If the next day's projected flow exceeds the calculated allowable flow, the contractor contacts the respective dischargers to have the flow reduced.

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39. Prior to completion of the MP, the Discharger and the two other oil companies discharged up to their respective allowable flows except when reductions were necessary to meet receiving water limits. During periods of low flow in the Beardsley Canal, each Discharger reduced its discharge according to mutually agreed discharge allocations. Currently, the discharge allocations are not realized as the mass balance calculation by the contractor determines how much reduction in the discharge is needed during low flow periods. This procedure is acceptable to the involved water agencies.
40. In 1991, the three oil companies, KDWD, the City of Bakersfield, and KCWA agreed on a maximum total discharge to Carrier Canal. The MP includes a similar mass balance equation for discharge to Carrier Canal, except that it limits the sum of flows to the canal to 15.2 mgd.
41. Section D, page 6, of the MP discusses opportunity for additional discharges to the Beardsley Canal. On 20 March 1997, the three oil companies mutually agreed to delete this section from the MP.

OTHER PLANS AND POLICIES

42. The Board's antidegradation policy is established by 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16. The policy requires that where existing quality of water is better than quality established in policies such as the Basin Plan, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to people of the State, and will not unreasonably affect present and anticipated beneficial use of such water. The Discharger supplies irrigation water that, after blending with other supplies, has been a benefit to the farmers in the area. The increase in pollutants discharged will not cause significant impact on the beneficial uses of groundwater and surface waters. The continued development and processing of oil supplies, and the use of the water for irrigation, both benefit the people of the State.
43. The U.S. Environmental Protection Agency (US EPA) and the Board have classified this discharge as a minor discharge.
44. Effluent limits and toxic and pretreatment effluent standards established pursuant to Sections 208(b), 301, 302, 303(d), 304, 306, and 307 of the Clean Water Act and amendments thereto that are applicable to the discharge are specified herein.

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45. Effluent limits established by 40 CFR 435.50, et seq. (*Oil and Gas Extraction Point Source Category, Agricultural and Wildlife Water Use Subcategory*) are applicable to the discharge.
46. Federal Regulations for storm water discharges were promulgated by US EPA on 16 November 1990 (40 CFR Parts 122, 123, and 124). The regulations require specific categories of facilities to implement Best Available Technology Economically Achievable (BAT) and best Conventional Pollutant Control Technology (BCT) to reduce or eliminate industrial storm water pollution. Regulations specified in 40 CFR Part 122.26 (b)(14)(iii) require facilities involved with oil exploration, production, or conveyance operations which discharge storm water to obtain NPDES permits for the discharge of storm water.
47. The State Water Resources Control Board adopted Order No. 91-13-DWQ (General Permit No. CAS000001) specify waste discharge requirements for discharges of storm water associated with industrial activities, excluding construction activities. These WDRs require the Discharger to demonstrate that all storm water is contained or to submit a Notice of Intent (NOI) by industries to be covered under the General Permit.
48. The US EPA adopted the National Toxics Rule (NTR) on 5 February 1993. The NTR requires effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on the existing information, the discharge is unlikely to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard.

CEQA

49. The action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.), in accordance with Section 13389 of the California Water Code.

PUBLIC CONSULTATION

50. The Board notified the Discharger and interested agencies and persons of its intent to renew waste discharge requirements for this discharge, and provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
51. The Board, in a public meeting, heard and considered all comments pertaining to this renewal.

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52. This Order shall serve as an NPDES permit pursuant to Section 402 of the Clean Water Act, or amendments thereto, and shall take effect upon the date of hearing, provided US EPA has no objections.

IT IS HEREBY ORDERED that Order No. 92-106 is rescinded and Texaco Exploration and Production Inc., its agents, successors and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. Discharge Prohibitions:

1. Discharge of treated wastewater to canals in a manner or at locations different from that described in Finding Nos. 6 and 8 is prohibited.
2. The discharge of wastewater to the Kern River is prohibited.
3. The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by Standard Provision A.13.
4. Discharge of wastewater into the Carrier Canal is prohibited when the canal is being used as a water supply source for municipal use.
5. The blending of wastewater with groundwater from sources other than oil field production activities for the purpose of increasing available assimilative capacity is prohibited unless it does not constitute a waste and unreasonable use of that groundwater.
6. The discharge of waste pollutants into surface waters from any source other than wastewater associated with the oil production process is prohibited.
7. The discharge of wastewater to the Carrier Canal is prohibited except when necessary during shutdown of the Beardsley Canal.
8. Discharge of wastes classified as "hazardous" or "designated", as defined in Title 23, California Code of Regulations (CCR), Section 2521(a) and 2522(a), is prohibited.

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B. Effluent Limitations:

1. Maximum daily discharge flow shall not exceed 43 mgd or the available assimilative capacity in the receiving water, whichever is less.
2. Discharge 001 and 002 shall fully comply with the amended MP, dated 20 March 1997.
3. Effluent shall not exceed the following limits:

<u>Constituent</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>
EC	umhos/cm	1,500	2,000
Chlorides	mg/l	275	300
Boron	mg/l	2.0	2.0
Oil and Grease	mg/l	---	35

4. Discharge 001 and 002 shall not have a pH less than 6.5 or greater than 8.3.
5. Total combined discharge to the Carrier Canal from the Discharger, ARCO, and Chevron shall not exceed 15.2 mgd and the available assimilative capacity in the canal, whichever is less.

C. Receiving Water Limitations:

Receiving water limitations for surface water are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this permit.

The discharge, alone or in combination with other sources, shall not cause the following in canal waters:

1. Oils, greases, waxes, or other materials to form a visible film or coating on the water surface or on the stream bottom.

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2. Oils, greases, waxes, floating material (liquids, solids, foams, and scums) or suspended material to create a nuisance or adversely affect beneficial uses.
3. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses or that produce detrimental physiological responses in human, plant, animal, or aquatic life.
4. Esthetically undesirable discoloration.
5. Fungi, slimes, or other objectionable growths.
6. Deposition of material that causes nuisance or adversely affects beneficial uses.
7. Violation of any applicable water quality standard for receiving waters adopted by the Board or the State Water Resources Control Board as required by the Clean Water Act and regulations adopted thereunder.
8. Constituents to exceed the following concentrations:

<u>Constituents</u>	<u>Units</u>	<u>Daily Maximum</u>
EC	μ mhos/cm	700
Chlorides	mg/l	106
Boron	mg/l	0.5

D. Groundwater Limitations:

The discharge, in combination with other sources, shall not cause groundwater underlying the discharge locations to contain waste constituents in concentrations statistically greater than background water quality, except for EC. In no case shall the discharge, in combination with other sources, cause underlying groundwater in the Kern River Groundwater Hydrographic Unit to increase in EC by more than 25 μ mhos/cm, and in the Poso Groundwater Hydrographic Unit by more than 30 μ mhos/cm, over any five-year period.

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E. Provisions:

1. The Discharger shall comply with the "Standard Provisions and Reporting Requirements (NPDES)," dated 1 March 1991, which are part of this Order. This attachment and its individual paragraphs are referred to as "Standard Provision(s)."
2. The Discharger shall comply with the attached Monitoring and Reporting Program No. 97-124, which is part of this Order, and any revisions thereto, as ordered by the Executive Officer.
3. This Order expires on **1 June 2002** and the Discharger must file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations, not later than 180 days in advance of such date in application for renewal of waste discharge requirements if it wishes to continue the discharge.
4. By **29 August 1997**, the Discharger shall submit a Notice of Intent to comply with the State Water Resources Control Board General NPDES Permit for Discharges of Storm Water Associated with Industrial Activities. Alternatively, by **29 August 1997**, the Discharger may submit written certification with accompanying documentation that:
a) all storm water is contained on site; or b) precipitation runoff from the site does not contact crude oil or other materials associated with oil production which could contaminate storm water.
5. The Discharger shall, in coordination with the City of Bakersfield, assure that all downstream water districts and the Kern County Water Agency are notified at least **48 hours** prior to any discharge to the Carrier Canal.
6. The Discharger shall comply with the terms of the MP, dated 20 March 1997, to assure that receiving water limitations are met. In the event discharges to either canal cause violations of receiving water limitations and it is not possible to tell which of the three Dischargers is causing violation of the limitations or the terms of the MP during the exceedance, all three parties shall be responsible on a pro rata basis, based on their 3-month average discharge volumes, to the extent that the cause of the receiving water limitation exceedance is a result of the subject discharges. Any amendments to the MP shall be reported to the Board at least 120 days prior to execution of the amendment and, if the amendment may affect compliance with this Order, shall be a cause of modification, or possible revocation and reissuance, of this Order.

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7. Prior to making any change in the discharge point, place of use, or purpose of use of the wastewater, the Discharger shall obtain approval of or clearance from the State Water Resources Control Board (Division of Water Quality and Water Rights).
8. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office.

To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision D.6 and state the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

I, GARY M. CARLTON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 20 June 1997.



GARY M. CARLTON, Executive Officer

RA:ra/fmc:6/20/97

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. 97-124

NPDES NO. CA0078352

FOR
TEXACO EXPLORATION AND PRODUCTION INC.
KERN RIVER OIL FIELD
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EFFLUENT MONITORING

Effluent samples shall be collected prior to discharge to the canal(s). Effluent samples should be representative of the volume and quality of the discharge. Time of collection of samples shall be recorded. Effluent monitoring shall include at least the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>		
Flow ¹	mgd	Measured	Continuous	Monthly avg	Daily max 43 mgd 15.2
EC	μ mhos/cm	Grab	Daily	1500	2000
Boron	mg/l	Grab	Weekly	2.0	2.0
Chlorides	mg/l	Grab	Weekly	275	300
Oil and Grease ²	mg/l	Grab	Weekly		35
pH 6.5 - 8.3					

¹ A summary of the mass balance calculations must be submitted with the results of the flow measurements to describe the assimilative capacity of the canal(s) during the monitoring period.

² Four composite grab samples in a 45-minute period.

The Discharger shall coordinate with ARCO and Chevron to ensure that all samples are collected on the same date and at approximately the same time.

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If results of monitoring a pollutant appear to violate monthly average effluent limits, the frequency of sampling must be increased to daily until compliance is verified. If effluent monitoring detects a pollutant at concentrations greater than a daily maximum limit, the Discharger shall resample and reanalyze the discharge immediately after receiving knowledge of the exceedance. The frequency of sampling must be increased to daily until compliance is verified.

If the discharge is intermittent rather than continuous, then on the first day of each such intermittent discharge, the Discharger shall monitor and record data for all of the constituents listed above, after which the frequencies of analysis given in the schedule shall apply for the duration of each such intermittent discharge. In no event shall the Discharger be required to monitor and record data more often than twice the frequencies listed in the schedule.

RECEIVING WATER MONITORING

All receiving water samples shall be grab samples. Samples shall be collected at approximately the same time as the collection of effluent samples. Receiving water monitoring shall include at least the following and be performed at the sample stations associated with the approved discharge point in use:

<u>Sampling Station</u>	<u>Description</u>
R-1	Beardsley Canal immediately downstream from Beardsley Weir
R-2	Beardsley Canal immediately upstream from the Manor Street crossing
R-1'	Conduit "A" immediately upstream from Beardsley Canal
R-2'	Beardsley Canal at Olive Drive
R-3	Kern River immediately upstream from Rocky Point Weir
R-4	Carrier Canal immediately upstream from the Manor Street crossing

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<u>Discharge</u>	<u>Sample Stations</u>
Beardsley Canal (001)	R-1 & R-2; or R-1, R-1' & R-2 ¹
Carrier Canal (002)	R-3 & R-4

¹ Applicable during periods when California Aqueduct water is being conveyed to the Beardsley Canal via the Cross Valley Canal and Conduit "A".

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
EC	μ mhos/cm	Grab	Daily ¹ 700
Boron	mg/l	Grab	Daily ¹ 65
Chlorides	mg/l	Grab	Daily ¹ 106
Flow	mgd	Measured	Daily

¹ When the combined discharge flows from the Discharger, Chevron, and ARCO are less than or equal to 10 percent of Beardsley Canal flows, monitoring frequency may be weekly.

REPORTING

Monitoring results shall be submitted to the Regional Board by the **25th day of the month** following sample collection.

In reporting the monitoring data and summary of the mass balance calculations, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner to illustrate clearly whether the discharge complies with waste discharge requirements. The mass balance calculations must clearly show the assimilative capacity of the canals during the discharge period.

If the Discharger monitors any pollutant at the locations designated herein more frequently than is required by this Order, the results of such monitoring shall be included in the calculation and reporting of the values required in the discharge monitoring report form. Such increased frequency shall be indicated on the discharge monitoring report form.

MONITORING AND REPORTING PROGRAM
TEXACO EXPLORATION AND PRODUCTION, INC.
KERN RIVER OIL FIELD
KERN COUNTY

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By 30 January of each year, the Discharger shall submit a written report to the Executive Officer containing the following:

- a. The names, telephone numbers, and general responsibilities of persons to contact regarding the wastewater discharge system for emergency and routine situations.
- b. A statement certifying when the flow meter and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration (Standard Provision C.6).
- c. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the wastewater treatment system as currently constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.

The Discharger may also be requested to submit an annual report to the Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

All reports submitted in response to this Order shall comply with the signatory requirements of Standard Provision D.6.

The Discharger shall implement the above monitoring program on the first day of the month following effective date of this Order.

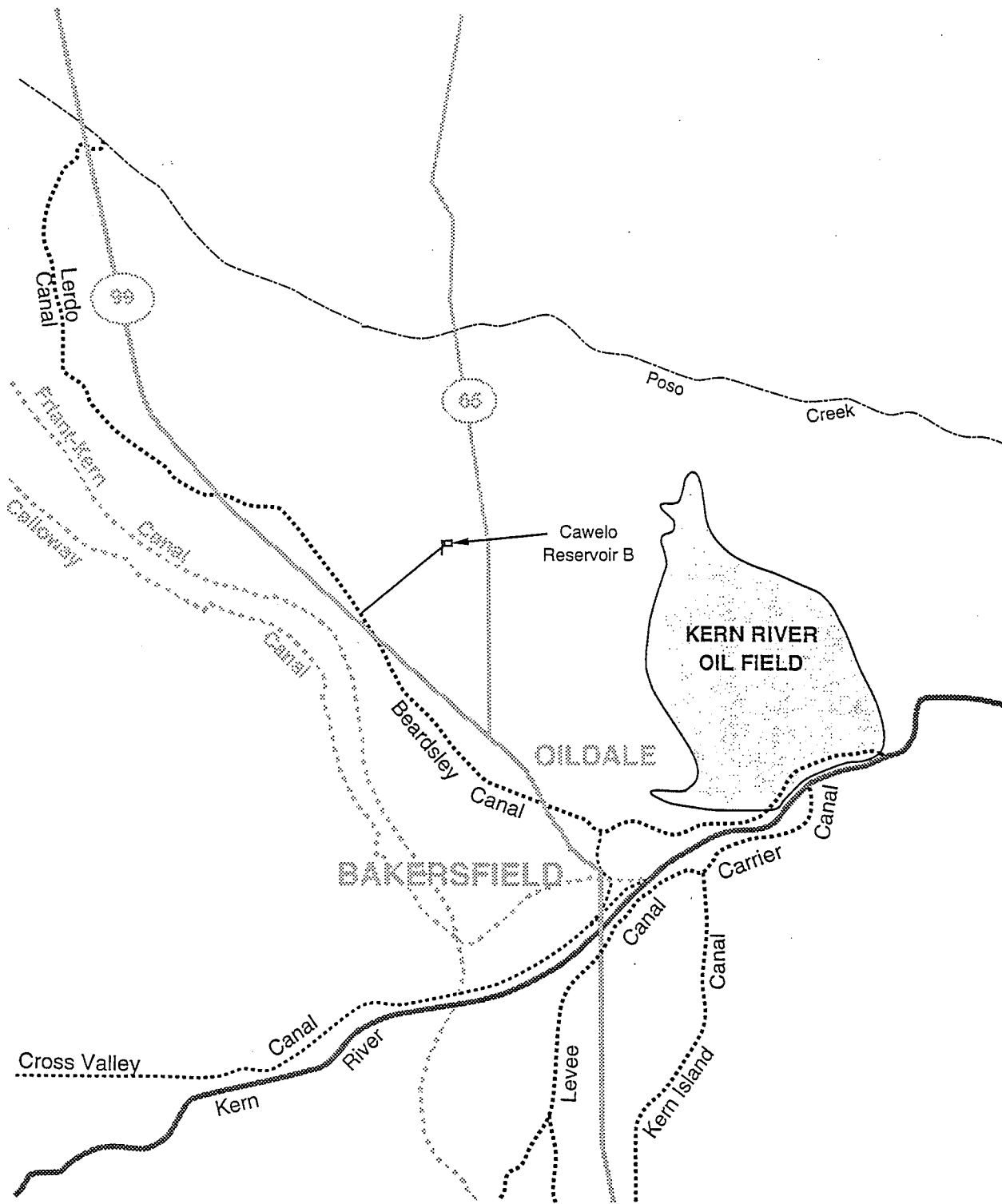
Ordered by:


GARY M. CARLTON, Executive Officer

20 June 1997

(Date)

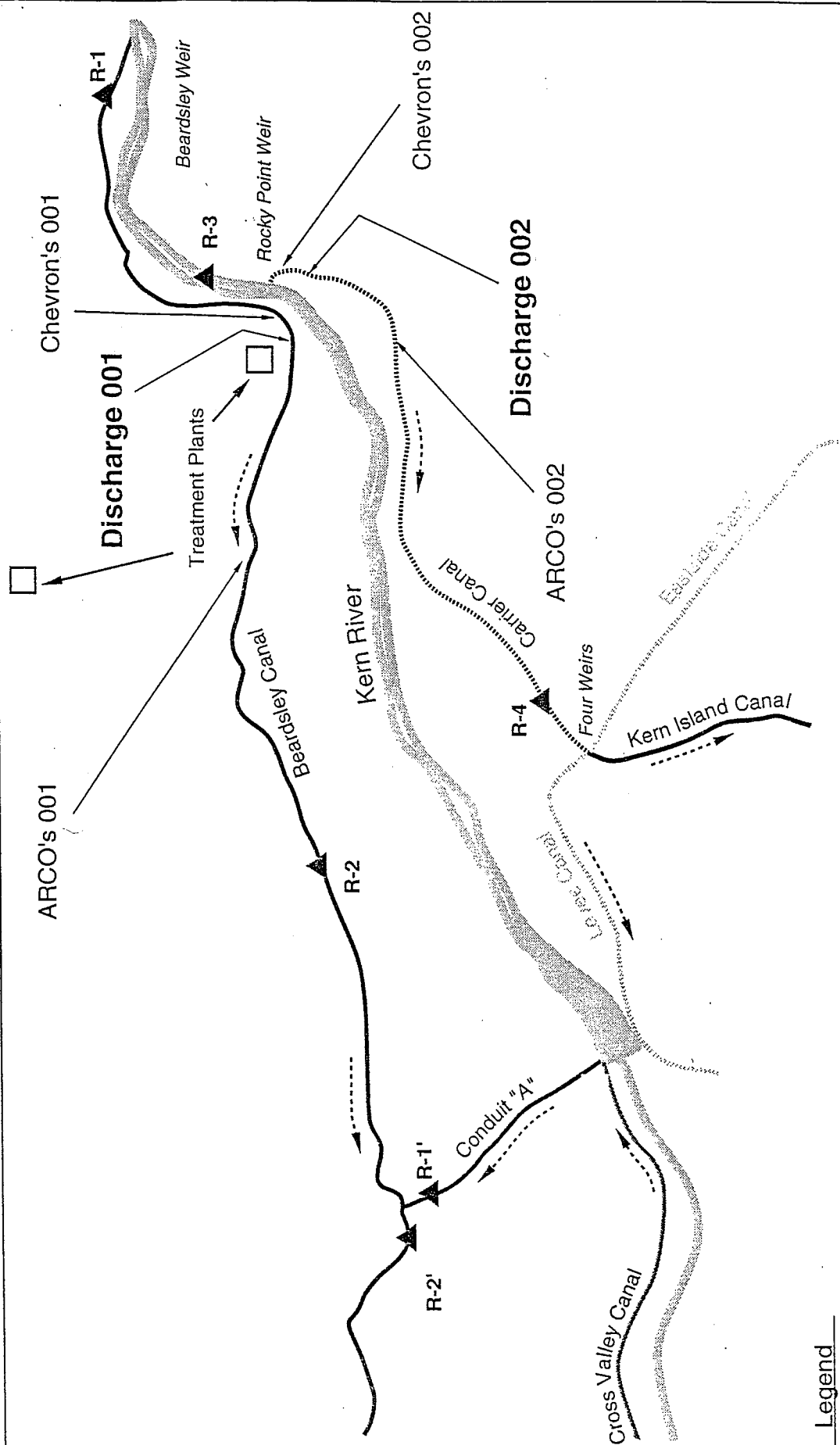
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ATTACHMENT A
VICINITY MAP
TEXACO EXPLORATION & PRODUCTION INC.
KERN RIVER OIL FIELD, KERN COUNTY

(Not to Scale)





Legend



NORTH

▲ R-2 Monitoring Station

Not to Scale

ATTACHMENT B

TEXACO EXPLORATION & PRODUCTION INC.
KERN RIVER OIL FIELD
KERN COUNTY

DISCHARGE POINTS AND MONITORING LOCATIONS

INFORMATION SHEET

TEXACO EXPLORATION AND PRODUCTION INC. KERN RIVER OIL FIELD, KERN COUNTY

Texaco Exploration and Production Inc., (hereafter Discharger) owns and operates wastewater treatment plants for the produced wastewater in the Kern River oil field immediately north of Bakersfield near the Kern River. Prior to discharge, wastewater is treated for the removal of oil, grease, and inorganic sediments. Treatment consists of mechanical separation, sedimentation, and air flotation. The treatment plants have a maximum oil and grease treatment capacity of 43 million gallons per day (mgd).

Up to 16 mgd of the produced wastewater is converted to steam by cogeneration plants and steam generators and injected for enhanced oil recovery purposes. Steam injection wells are Class II injection wells permitted by the Division of Oil and Gas (DOG). The cogeneration wastewater feed is softened for corrosion control before it is converted to steam. The softening process produces brine water which is disposed of by Class II injection wells. The remaining wastewater, up to 27 mgd, are discharged to either the Beardsley Canal; the Carrier Canal; Cawelo Water District's Reservoir B; injection wells permitted by DOG; or a combination of the above. Discharge to Cawelo Water District's Reservoir B is regulated by WDRs Order No. 95-031 (NPDES No. CA0082295).

Discharges to the Beardsley Canal (Discharge 001) and the Carrier Canal (Discharge 002) are currently regulated by Waste Discharge Requirements (WDRs) Order No. 92-106 (NPDES No. CA 0078352). The Discharger collects effluent samples daily for conductivity (specific electrical conductance at 25°C, also referred to as "EC"), boron and chloride and weekly samples for oil and grease. The monitoring results for January 1991 through March 1997 show the discharge complies with the effluent limitations of Order No. 92-106.

The Beardsley Canal is lined and originates on the Kern River at the Beardsley Weir about one mile upstream of Discharge 001. The canal becomes the Lerdo Canal about five miles downstream of Discharge 001. The Beardsley and Lerdo Canals serve as a significant source of agricultural water supply to the North Kern River Water Storage District and Cawelo Water District. Total agricultural land served by the canals within these Districts is about 110,000 acres, of which about 40,000 acres are permanent crops that are boron-sensitive. The Beardsley Canal also serves about 10,000 acres of land south of these Districts and within the sphere of influence of the City of Bakersfield.

The Discharger collects daily samples from the Beardsley Canal and submits the results monthly. The January 1991 to March 1997 monitoring reports show that the discharge is in compliance with the Receiving Water Limitations of Order No. 92-106.

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TEXACO EXPLORATION AND
PRODUCTION INC.
KERN RIVER OIL FIELD, KERN COUNTY

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The Carrier Canal originates on the Kern River at Rocky Point Weir immediately upstream of Discharge 002. The canal serves as a significant source of agricultural water supply for the Kern Delta Water District (KDWD). The canal also supplies water to the Kern County Water Agency's (KCWA's) Water Purification Plant for municipal use. The City of Bakersfield coordinates with the Discharger and the KCWA to ensure no wastewater enters the purification plant. If wastewater is discharged to the Carrier Canal, the KCWA receives prior notification to ensure that other sources of raw water supply is used for the duration of the discharge.

Chevron USA, Inc. (Chevron) and ARCO Western Energy (ARCO) likewise discharge to the canals. ARCO discharges to the Beardsley canal downstream of Discharge 001. Discharge 002 is downstream of discharge from Chevron and upstream of discharge from ARCO.

The Discharger, ARCO, and Chevron have developed and follow a mutually agreed Management Plan (MP) that oversees discharges to Beardsley and Carrier canals. The MP requires that upstream receiving water and effluent samples be collected and analyzed by a State certified laboratory contractor (contractor). The contractor determines the maximum volume of wastewater each discharger may discharge to ensure the receiving water quality downstream of the discharges remains less than 95% of the permitted limits. In November 1992, the Board reviewed and approved the MP and the Discharger began implementing it in December 1992.

The contractor collects effluent samples daily, and water samples daily from the Beardsley Canal upstream and downstream of the discharges from the three oil companies. Boron is reportedly the determining factor in complying with the receiving water limitations. Daily analyses are used in a mass balance equation to calculate the maximum allowable flow by each oil company. If the next day's projected flow exceeds the calculated allowable flow, the contractor reportedly contacts the respective discharger to have the flow reduced. The effluent monitoring program of the proposed Order requires that a summary of the mass balance calculations be submitted to describe the assimilative capacity of the canal(s) during the discharge period.

In 1991, the three oil companies, KDWD, the City of Bakersfield, and KCWA agreed on a maximum total discharge to Carrier Canal. The MP includes a similar mass balance equation for discharge to Carrier Canal, except that it requires the sum of flows to the canal not exceed 15.2 mgd.

The Basin Plan contains waster quality objectives for surface and groundwaters in the Basin. The Basin Plan identifies the basin as being closed. It recognizes that salt will increase over time and it includes a strategy of controlled degradation. Based on public hearings in October 1982 and March 1985, the Board determined that conditional degradation of canal waters and

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TEXACO EXPLORATION AND
PRODUCTION INC.
KERN RIVER OIL FIELD, KERN COUNTY

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groundwaters by oil field discharges was in the public interest. It established that beneficial use of the canal water would be protected if concentrations of boron, chloride, and EC never exceed 0.5 mg/l, 106 mg/l, and 700 μ mhos/cm, respectively. These limits are based on *Water Quality for Agriculture* by R.S Ayers and D.W Westcot of the Food and Agricultural Organization of the United Nations, 1976, and testimony received during the 1982 and 1985 hearings. Salinity degradation parameters for groundwater established by the Basin Plan (5 and 6 μ mhos/cm per year in the related Groundwater Hydrographic Units) also govern. The Order prescribes the subject receiving water limitations, similar to the receiving water limitations of Order No. 92-106.

The proposed Order also includes the same effluent limits as Order No. 92-106. Effluent limits are based on the receiving water limits established as noted above, historical effluent quality, and the terms of the MP regarding allowable assimilative capacity in the canals. The effluent oil and grease limitation is pursuant to 40 CFR 435.50, et seq. (Oil and Gas Extraction Point Source Category, Agricultural and Wildlife Water Use Subcategory).

The effluent salinity limits prescribed in the proposed Order reflect the Basin Plan Policy and Resolution No. 82-136, a Basin Plan amendment for discharge of oil field wastewater. The amendment allows salinity concentrations in excess of the Basin Plan effluent limits for discharges to surface waters as long as the discharge does not substantially affect water quality or cause a violation of water quality objectives.

The discharge is consistent with the antidegradation provisions of 40 CFR 131.2 and State Water Resources Control Board Resolution 68-16. The policy requires that where existing quality of water is better than quality established in policies such as the Basin Plan, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to people of the State, and will not unreasonably affect present and anticipated beneficial use of such water. The Discharger supplies irrigation water that has been a benefit to the farmers in the area.

Surface water drainage is toward the Beardsley Canal. The Discharger has not demonstrated but believes it can contain storm water on site. Storm water regulations are not included in the Order. However, the Discharger is required to obtain coverage under the General Permit or certify that either precipitation does not contact materials which could contaminate storm water or the storm water is retained on site.

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TEXACO EXPLORATION AND
PRODUCTION INC.
KERN RIVER OIL FIELD, KERN COUNTY

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The action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.), in accordance with Section 13389 of the California Water Code.

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